PCIA Personal Communications Industry Association

EX PARTE OR LATE FILED

October 24, 1996

William S. Caton
Federal Communications Commission
1919 M Street, N.W.; Room 222
Washington, D.C. 20554

Re: Notification of *Ex Parte* Contact in ET Docket No. 93-62

Dear Mr. Caton:

The Personal Communications Industry Association ("PCIA") hereby notifies the Commission of an *ex parte* contact in the above referenced docket. On October 21, 1996, at the Commission's request, PCIA forwarded the attached letter to Dr. Cleveland regarding the draft rewrite of OET Bulletin No. 65. As these issues relate to ongoing issues in ET Docket No. 93-62, a copy has been provided for the docket.

Should any questions arise concerning this notification, please contact Sheldon Moss at (703) 739-0300 x3311.

Sincerely,

Sheldon Moss

Sheldon Moss
Manager, Government Relations

Encl.

• 500 Montgomery Street • Suite 700 • Alexandria, VA 22314-1561 •
• Tel: 703-739-0300 • Fax: 703-836-1608 • Web Address: http://www.pcia.com •

PCIA Personal Communications Industry Association

October 21, 1996

Robert F. Cleveland, Jr., Ph.D.
Office of Engineering & Technology
Federal Communications Commission
2000 M Street, N.W.; Room 230
Washington, D.C. 20554

Re: Personal Communications Industry Association Review of Draft Technical Bulletin No. 65

Dear Dr. Cleveland:

The Personal Communications Industry Association ("PCIA") expresses its appreciation to your office for the opportunity to participate in the review of Draft Technical Bulletin 65. PCIA is a broad based trade association whose members include companies that provide broadband personal communications services ("PCS"), paging and narrowband PCS, and specialized mobile radio ("SMR") services. PCIA's membership also includes companies that manage and operate communications sites and facilities, companies that operate private wireless systems, as well as manufacturers and suppliers of wireless communications equipment and devices. PCIA thus represents a significant portion of the industry segments whose operations, licensing, and compliance obligations are directly affected by the recent *Report and Order* in ET Docket 93-62 and the compliance framework provided by the Office of Engineering and Technology ("OET") in Draft Bulletin No. 65.

In its review and analysis of Draft Bulletin No. 65, PCIA called upon technical and operations experts from the full range of CMRS carriers in its membership. The following comments were developed following a series of meetings where representatives from the broadband PCS, paging and narrowband PCS, SMR, and commercial antenna site management sectors of the wireless industry participated. As a result, PCIA believes these comments encompass concerns and suggestions that span different segments of the wireless industry and as such, may be particularly useful in assisting the FCC to refine Bulletin No. 65 so that it ultimately becomes a more practical compliance resource for the wireless industry.

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In this regard, PCIA, like numerous other trade associations and companies, also recently filed a petition for clarification and reconsideration of the *Report and Order* in ET Docket No. 93-62. Specifically, PCIA urged the Commission to: (i) clarify the extent of carriers' "area wide" compliance obligations, (ii) allow broader input on Draft Bulletin No. 65, (iii) postpone the transition date for the new compliance procedures to one year after the release of OET Bulletin No. 65, (iii) raise the "area wide" compliance threshold from one percent to ten percent or more, and (iv) conform the definition of "covered SMR" to be consistent with pending petitions for reconsideration in other dockets. In its petition, PCIA recognized that some of the issues it raised could be mooted by the release of the final version of OET Bulletin No. 65. At the same time, however, many of the issues raised by PCIA also could necessitate further revisions to OET Bulletin No. 65. PCIA's review of Draft Bulletin No. 65 does not attempt to revise the document to accommodate any issues pending on reconsideration. Rather, PCIA has concentrated its efforts on steps necessary to guide carriers and other entities in their compliance responsibilities under the state of the environmental rules as they now exist. Nonetheless, PCIA believes that it is critical for the Commission to proceed both with resolution of the pending petitions for reconsideration and issuance of the final OET Bulletin No. 65 as soon as possible, acknowledging that some further revisions to OET Bulletin No. 65 may be necessary in light of the reconsideration order.

PCIA's comments on Draft Bulletin No. 65 are divided into six sections dealing, respectively, with global compliance obligations, mathematical modeling of fields, measurement techniques, area-wide compliance requirements, controlling exposure, and minor corrections.

1. Global Compliance Obligations

The Bulletin should explicitly endorse "reasonable" compliance actions. PCIA generally believes the Draft Bulletin provides a clear and concise summary of carriers' obligations under the newly adopted rules. As the Draft Bulletin implicitly recognizes, however, unanticipated situations may arise and alternative, or newly developed, methodologies may be developed to assist in achieving compliance with the electromagnetic energy emission ("EME") exposure limits. While the Draft Bulletin explicitly recognizes and approves the use of "other methods and procedures . . . if based on sound engineering practice," PCIA believes that the Bulletin should also provide explicit assurances that "reasonable" compliance actions and assumptions by licensees are acceptable.

The Bulletin should provide further discussion clarifying reporting and recordkeeping obligations. PCIA members also have noted that Draft Bulletin No. 65 does not discuss the level of detail required in reports filed with the FCC, in the case of Environmental Assessments, or records kept by the licensee, in the case of "routine assessments." PCIA urges the FCC to provide some indication as to the scope of the requirements or, even more beneficially, samples or suggested forms.

The Bulletin should clarify the meaning of the categorical exclusions. PCIA also notes that the Draft Bulletin No. 65 indicates that "the categorical exclusions are not exclusions from *compliance* but, rather, exclusions from performing routine environmental evaluations." PCIA had understood from the *Report and Order* that the categorical exclusions were intended to relieve carriers from the burden of demonstrating compliance for a broad range of transmitting facilities where the risk of exceeding the maximum permissible exposure limits was negligible. Because the statement in Draft Bulletin No. 65 could be interpreted to mean that routine compliance is always required, PCIA urges the Commission to supplement the statement or provide additional clarification. For example, the Bulletin could state, consistent with PCIA's understanding, that the lack of routine evaluation obligations is a sufficient basis for assuming compliance, unless the carrier is otherwise notified or unless the carrier has reason to know that the facility implicates unusual characteristics and therefore may not be in compliance.

The Bulletin should provide examples and clarifications on environmental terms. PCIA also believes that the Bulletin should provide examples and factors to consider in applying the definition of "occupational/controlled environment" and "general population/uncontrolled environment." Examples of situations elaborating on each of the relevant aspects of the definitions -- *e.g.*, "awareness of the risks of exposure," "transient/incidental passage," *etc* -- would greatly facilitate compliance assessment. Furthermore, a brief listing of the types of factors relevant to making determinations under the definitions would also be beneficial.

The Bulletin should clarify the requirements pertinent to H-Field measurements. As a final matter, PCIA urges the FCC to clarify as a global matter the relevance of the H-field to exposure assessment. ANSI and NCRP both require measurement and understanding of the magnetic (H) fields for all transmitters under 300 MHz. While this has been shown to be important, this requirement is not easily achievable on complex, multifrequency sites. Under the circumstances, OET Bulletin No. 65 should

explicitly acknowledge that, at complex multifrequency sites, the measurement of the H-field can be complicated by extreme, out of band response to higher frequency components on the sites.

2. Mathematical Modeling of Fields

The Bulletin should incorporate near-field modeling equations. After reviewing Draft Bulletin No. 65 and discussing the mathematical modeling with members and experts in the EME exposure field, PCIA believes that the modeling equations provided in the Bulletin are acceptable for the far field, but do not accurately represent the near field, which is most relevant to carriers' compliance assessments. PCIA believes that the use of the "cylindrical model," in conjunction with industry-recognized assumptions and model inputs, has been determined to better represent the field strengths associated with near field exposure. PCIA urges the Commission to incorporate near field modeling into OET Bulletin No. 65 to ensure that the approved equations for use by carriers accurately reflect, to the degree possible, the EME environment of a facility. In this connection, PCIA urges the FCC also to specify the distances at which the near field/cylindrical and far field models are appropriate for use, and to provide a more extensive discussion relative to the use of "reflection coefficients."

Modeling equations should explicitly address duty cycle time averaging. PCIA also believes the equations for modeling exposure should consider the effects of equipment duty cycles. In determining compliance with the exposure limits, the Bulletin explicitly recognizes that exposure time averaging is an appropriate means for ensuring compliance. The equations provided, however, do not explicitly recognize duty cycle as being relevant.

The Bulletin should discuss and clarify spatial averaging techniques. PCIA further believes that additional elaboration on spatial averaging is warranted. The legitimacy of spatial averaging has been recognized both by ANSI/IEEE and NCRP, both of the institutions providing source material for the FCC's exposure limits. PCIA accordingly believes that the Bulletin should provide a discussion of spatial averaging and the effects of spatial averaging on achieving compliance. Such averaging, over the body dimensions, provides a more meaningful measure of the ability of the incident EME fields to deliver a whole body averaged SAR equal to the basic limit. Hence, OET Bulletin No. 65 must clearly state that the MPEs are in terms of those values found when spatially averaging the EME fields over the body.

The "field factor" discussion should be extended to antennas with gain in the horizontal plane. PCIA also notes that the Bulletin provides a discussion of "field factors" relevant to antennas with directionality in the vertical plane. PCIA believes that the Bulletin should explicitly recognize that these same techniques are equally applicable to antennas with directivity in the horizontal plane.

The Bulletin should encourage development and use of compliance modeling tools. Last, PCIA believes the FCC should develop, or encourage the development of, tools to assist in modeling EME at complex sites. While there are limited computer programs available for use, the Commission should work with developers to increase the availability of these types of systems, as well as potentially "certifying" or "approving" modeling programs it deems accurate. In this connection, PCIA also believes the FCC should urge antenna manufacturers to publish reference materials on antennas relevant to determining near field exposure limits.

3. Measurement Techniques

Site measurement procedures should be clarified. The consensus among PCIA members is that, due to practical difficulties with obtaining accurate, up-to-date information on antennas needed to model complex environments mathematically, direct measurement of the EME at sites will be required far more often than contemplated in the *Report and Order*. Carriers are thus appropriately concerned with ensuring that the measurement procedures outlined in the Draft Bulletin are practical to apply.

The Bulletin should explicitly contemplate use of shaped probes and other newly developed measurement equipment. While the Draft Bulletin discusses both narrowband and broadband probes, PCIA notes that shaped probes also are in use that arguably provide more accurate results in complex environments. PCIA believes the Draft Bulletin should indicate that the discussion of measurement tools is not exclusive, and that use of other types of measurement equipment complying with sound engineering practice are also suitable for determining EME compliance. In this regard, the FCC should also explicitly note that devices reporting exposure relative to the MPE are also acceptable, as long as the device incorporates appropriate divisors reflecting the FCC exposure rules.

4. Multiple Transmitter Sites

The Bulletin should define with particularity the area-wide compliance obligations of carriers. Of all of the compliance issues raised by PCIA's members, the issue of area-wide compliance for multiple transmitter sites was the most problematic. Carriers are still struggling with attempting to define the geographical extent of their compliance obligations, the impact of other licensees on ensuring continuing compliance, and their liability for multiple transmitter sites. Under the circumstances, PCIA strongly urges the FCC to address multiple transmitter sites in much greater detail in OET Bulletin No. 65. Specifically, PCIA requests the Commission to elaborate on:

- what constitutes the area over which area-wide obligations extend.
- whether licensees can make reasonable assumptions regarding facilities they do not know technical details about (*i.e.*, duty cycles, *etc*) based on the type of facility at issue.
- at what distance from the radiating source should the 1% limit for area wide compliance should be measured.

The Bulletin should urge a partnership between communications companies and site owners and managers. PCIA suggests that the FCC should use OET Bulletin No. 65 to address the constructive role that site owners and managers could play in terms of facilitating area-wide compliance at multiple transmitter sites. For instance, the FCC may want to indicate that carriers may wish to "partner" with the local site manager in collecting, calculating, analyzing, or disseminating (to the FCC) data, measurements, and other information necessary for documenting or verifying compliance with the exposure limits. This could involve delegation by the carrier or licensee the responsibility for measuring EME levels and compiling information that needs to be submitted to the FCC or kept on file.

An acknowledgment of the role that site owners and managers could play may foster a greater awareness on the part of licensees and site owners that compliance with the EME exposure guidelines can be better accomplished when all carriers and licensees with transmitters at a single site have a workable and practical process in place for coordinating compliance by all carriers at a site.

The Bulletin example on shared responsibility should be clarified. PCIA also notes that Draft Bulletin No. 65 offers the suggestion that shared responsibility at multiple

transmitter sites could be accomplished by apportioning responsibility based on each contributor's percentage of the EME at the facility. This suggestion, however, is only one of many potential sharing schemes that could be negotiated by licensees. Because the *Report and Order* does not set a default contribution scheme, it is inappropriate for OET Bulletin No. 65 to imply one solution to the exclusion of all others.

5. Ensuring Compliance

The Bulletin discussion of compliance measures should discuss the role of barriers in greater detail. Ultimately, the compliance or non-compliance of a particular site may depend in large part on the ability of licensees to define inaccessible and controlled areas close to the transmitter. While carriers' understanding of how to deploy barriers to isolate areas would be enhanced by elaboration on relevant terms in the definitions, members have raised a number of compliance questions related to specific barrier situations.

The Bulletin should clarify if physical barriers are required in all circumstances to limit general public accessibility. In some remote areas, for example, public access may be permitted, but the actual potential for exposure is negligible. This is the case for wilderness areas where hikers and backpackers are a theoretical possibility but, as a practical and aesthetic matter, those individuals would not be expected to be close to an antenna structure off recognized trails. In other cases, access to a broad area may be limited by "no trespass" signs, which PCIA believes mitigates the need for fences on the property where illegal trespassers would not be expected. Finally, there are situations (*e.g.*, undersides of bridges) where an individual could theoretically gain access, but would not, under normal circumstances, be expected. In all of these areas, a rational assessment would indicate that general public exposure is not an issue, yet, if someone did violate expected norms, the exposure may not be characterized as "transient." Coincidentally, these situations also present cases where the area immediately around the antenna may not be under the control of a licensee and where the licensee may not be able to arrange for installation of a physical barrier.

The Bulletin should discuss the measures needed to render a commercial rooftop "controlled." PCIA members have requested what measures would be sufficient to render a rooftop of a commercial building "controlled." Is it sufficient, for example, to lock all points of egress to the rooftop and limit distribution of keys to "EME-aware" individuals? If locking is not a viable option, is placing a EME warning sign on the

door sufficient if the general public is not expected to seek access to the roof? Given that some types of personnel can reasonably be expected to visit the rooftop on occasion (*e.g.*, air conditioning technicians, architects), will a requirement that such individuals be accompanied by an EME-aware escort charged with ensuring their protection sufficient to maintain the nature of the environment as "controlled"?

The Bulletin should elaborate on the types of measures sufficient to bring high MPE levels into conformity with the exposure limits. The Commission, for example, has cited protective clothing, personal monitors, time averaging, and transmitter shut down as possible mitigating factors. PCIA requests further clarification on the rate of, for example, spatial averaging, raising antennas on rooftops, and the painting of lines designating "no access areas" within controlled environments.

The Bulletin should recognize the effects of signal attenuation due to building structures. PCIA believes there should be some explicit acknowledgment that building structures can have significant signal attenuation effects that can assist in achieving compliance.

The Bulletin should provide further information on the use of RF Protective Suits. Finally, PCIA notes that in cases where power shutdown or power reduction is not a practical alternative for controlling exposure, protective clothing has been shown to be effective in reducing exposure. Based upon evaluations of the effectiveness of EME protective clothing obtained through direct SAR measurement in a human-equivalent model, complete coverage of the body (hands, feet, and head) may not always be required to achieve compliance. Because PCIA believes the aesthetic, comfort, and convenience of EME protective clothing may detract from their utilization, the Commission should acknowledge the results of research and encourage licensees to investigate the potential compliance benefits of these products.

6. Minor/Typographical Errors

Although generally non-substantive, PCIA has noted a number of typographical or clerical errors in the draft:

- Page 4, ¶2, line 8, "whole body SAR" should be revised to read "whole body averaged SAR."

- Page 4, ¶2, the last sentence should be revised for accuracy to read "^the MPE limits from the recommended SAR limit ~~factors which allow MPE limits to be derived from recommended SAR limits~~."
- Page 4, ¶4, "v/m" should be "V/m"
- Page 10, ¶1, the definition of "R" should be revised from "distance to the center of radiation" to "distance from the geometrical center of the antenna."
- Page 15, Fig. 2, the 1 Watt ERP line should be deleted as it is difficult to conceive of ground reflections from such an antenna.
- Page 18, ¶1, given the variable distances involved, the final sentence should be modified to read: "^For the purpose of evaluating RF exposure, the ~~The~~ distance to the beginning ..."
- Page 19, ¶2, line 6, "can be multiplied" should be "should be multiplied".
- Page 19, ¶2, line 7, delete "more" since, in directions off the main beam, one should use the radiation pattern of the antenna to compute a realistic estimate of the exposure.
- Page 20, ¶4, line 2, "prudent" should be replaced with "systematic."
- Page 21, ¶3, line 10, "type" should be "types".
- Page 21, ¶4, line 9, "were s expected" should be "are expected".
- Page 22, Table 1 should specify the from where the distance is computed.
- Page 33, item (8), is unclear.
- Page 33, item (10), "from" should be "in".
- Page 33, item (12), "correct" should be "stable" or "steady state".
- Page 33, item (15), line 1, "antenna" should read "sensor".
- Page 34, item (16), "other forms of radiation" should read "other forms of ambient RF radiation and low frequency fields".
- Page 35, item (8) should be replaced with "Polarization of the antennas".
- Page 35, ¶4, "field distortions or other perturbations" should be replaced with "reactive fields".
- Page 36, ¶7, line 3, the "while" should be capitalized as "While".
- Page 38, ¶4, line 6, "to a 'better' one" should be deleted.
- Page 40, ¶3, the last sentence could be confusing and should be revised as follows: "For example, in workplace situations where maintenance tasks must be performed in high RF areas, the work could be ^divided into multiple shorter blocks of time spread out over a longer period of time so that the time-averaged exposure is acceptable."
- Page 55, ¶2, line 4, "as averaged over an 10" should read "as averaged over 10".

- Page 77, ¶3, line 2, "For purposes this model" should read "For purposes of this model".
- Page 79, ¶4, line 4, "In such cases in may not" should read "In such cases it may not".

PCIA also urges the FCC to consider a "brown bag" luncheon, or other meeting, to provide an overview of the rules, a demonstration of existing modeling and measurement technology, and allow informal questions and answers on EME compliance issues. This would provide an opportunity for the engineers in the field who must apply the techniques outlined in OET Bulletin No. 65 with insights into how the FCC would go about ensuring compliance at sites, as well as providing invaluable first-hand experience in EME compliance.

In closing, PCIA once again expresses its appreciation for the opportunity to participate in the review of Draft Bulletin No. 65. PCIA, as it has stated in its petition for clarification and reconsideration in this docket, believes that OET Bulletin No. 65 will be crucial for carriers seeking to comply with the revised exposure limits. PCIA once again urges the Commission to act expeditiously both to issue revised Bulletin No. 65 and to act upon the pending petitions for reconsideration of the *First Report and Order* in this docket.

If these suggestions have assisted OET in the task of revising OET Bulletin No. 65, please feel free to utilize PCIA's name in your acknowledgments. Should you have any questions regarding this correspondence, please do not hesitate to contact Sheldon Moss at (703) 739-0300 x3311.

Respectfully submitted,

PERSONAL COMMUNICATIONS
INDUSTRY ASSOCIATION

By: Sheldon Moss

Sheldon Moss
Manager, Government Relations